

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

F.B. RICE & CO.  
605 Darling Street  
Balmain, NSW 2041  
AUSTRALIE

Date of mailing (day/month/year) 18 September 2000 (18.09.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 84680	
International application No. PCT/AU99/00511	International filing date (day/month/year) 24 June 1999 (24.06.99)

1. The following indications appeared on record concerning:		
<input checked="" type="checkbox"/> the applicant	<input type="checkbox"/> the inventor	<input type="checkbox"/> the agent <input type="checkbox"/> the common representative
Name and Address ARISTOCRAT LEISURE INDUSTRIES PTY. LTD. 71 Longueville Road Lane Cove, NSW 2066 Australia	State of Nationality AU	State of Residence AU
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:		
<input type="checkbox"/> the person	<input checked="" type="checkbox"/> the name	<input type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence
Name and Address ARISTOCRAT TECHNOLOGIES AUSTRALIA PTY LTD 71 Longueville Road Lane Cove, NSW 2066 Australia	State of Nationality AU	State of Residence AU
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
3. Further observations, if necessary:		
4. A copy of this notification has been sent to:		
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned	
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned	
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  Christine Carrié
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C. 20231  
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

<b>Date of mailing</b> (day/month/year) 16 February 2000 (16.02.00)	
<b>International application No.</b> PCT/AU99/00511	<b>Applicant's or agent's file reference</b> 84680
<b>International filing date</b> (day/month/year) 24 June 1999 (24.06.99)	<b>Priority date</b> (day/month/year) 24 June 1998 (24.06.98)
<b>Applicant</b> CURTIS, Keith, Edwin et al	

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

24 January 2000 (24.01.00)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	<b>Authorized officer</b> Jean-Marc Vivet Telephone No.: (41-22) 338.83.38
--	--

**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 84680	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International application No. <b>PCT/AU99/00511</b>	International filing date ( <i>day/month/year</i> ) 24 June 1999	Priority Date ( <i>day/month/year</i> ) 24 June 1998
International Patent Classification (IPC) or national classification and IPC  <b>Int. Cl. <sup>7</sup> G06F 17/00</b>		
Applicant <b>ARISTOCRAT LEISURE INDUSTRIES PTY LTD</b>		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.																								
2.	This REPORT consists of a total of 3 sheets, including this cover sheet.  <input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  These annexes consist of a total of      sheet(s).																								
3.	This report contains indications relating to the following items:  <table style="width: 100%; border: none;"> <tr> <td style="width: 5%;">I</td> <td style="width: 5%; text-align: center;"><input checked="" type="checkbox"/></td> <td>Basis of the report</td> </tr> <tr> <td>II</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Priority</td> </tr> <tr> <td>III</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td>IV</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Lack of unity of invention</td> </tr> <tr> <td>V</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td>VI</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Certain documents cited</td> </tr> <tr> <td>VII</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Certain defects in the international application</td> </tr> <tr> <td>VIII</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Certain observations on the international application</td> </tr> </table>	I	<input checked="" type="checkbox"/>	Basis of the report	II	<input type="checkbox"/>	Priority	III	<input type="checkbox"/>	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	IV	<input type="checkbox"/>	Lack of unity of invention	V	<input checked="" type="checkbox"/>	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	VI	<input type="checkbox"/>	Certain documents cited	VII	<input type="checkbox"/>	Certain defects in the international application	VIII	<input type="checkbox"/>	Certain observations on the international application
I	<input checked="" type="checkbox"/>	Basis of the report																							
II	<input type="checkbox"/>	Priority																							
III	<input type="checkbox"/>	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability																							
IV	<input type="checkbox"/>	Lack of unity of invention																							
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VI	<input type="checkbox"/>	Certain documents cited																							
VII	<input type="checkbox"/>	Certain defects in the international application																							
VIII	<input type="checkbox"/>	Certain observations on the international application																							

Date of submission of the demand 24 January 2000	Date of completion of the report 23 February 2000
Name and mailing address of the IPEA/AU  AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer  <b>CATHERINE REES</b>  Telephone No. (02) 6283 2555

**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☒ the international application as originally filed.
- ☐ the description,        pages , as originally filed,  
   pages , filed with the demand,  
   pages , filed with the letter of .
- ☐ the claims,        pages , as originally filed,  
   pages , as amended (together with any statement) under Article 19,  
   pages , filed with the demand,  
   pages , filed with the letter of .
- ☐ the drawings,        pages , as originally filed,  
   pages , filed with the demand,  
   pages , filed with the letter of .
- ☐ the sequence listing part of the description:  
   pages , as originally filed  
   pages , filed with the demand  
   pages , filed with the letter of .

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of the sequence listing:**

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

**4. ☐ The amendments have resulted in the cancellation of:**

- ☐ the description,        pages
- ☐ the claims,        Nos.
- ☐ the drawings,        sheets/fig.

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims 1 - 8	YES
	Claims	NO
Inventive step (IS)	Claims 1 - 8	YES
	Claims	NO
Industrial applicability (IA)	Claims 1 - 8	YES
	Claims	NO

**2. Citations and explanations (Rule 70.7)**Citations:

EP 464811

Novelty (N) and Inventive Step (IS):

The above citation does not disclose or even suggest the invention as claimed. The invention must therefore be considered to be both novel and inventive.

## PATENT COOPERATION TREATY

CO  
E/m

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

To:

F.B. RICE & CO.  
605 Darling Street  
Balmain, NSW 2041  
AUSTRALIE

<b>Date of mailing (day/month/year)</b> 18 September 2000 (18.09.00)	<b>IMPORTANT NOTIFICATION</b>
<b>Applicant's or agent's file reference</b> 84680	
<b>International application No.</b> PCT/AU99/00511	<b>International filing date (day/month/year)</b> 24 June 1999 (24.06.99)

## 1. The following indications appeared on record concerning:

☒ the applicant      ☐ the inventor      ☐ the agent      ☐ the common representative

## Name and Address

ARISTOCRAT LEISURE INDUSTRIES PTY.  
LTD.  
71 Longueville Road  
Lane Cove, NSW 2066  
Australia

## State of Nationality

AU

## State of Residence

AU

## Telephone No.

## Facsimile No.

## Teleprinter No.

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person      ☒ the name      ☐ the address      ☐ the nationality      ☐ the residence

## Name and Address

ARISTOCRAT TECHNOLOGIES AUSTRALIA  
PTY LTD  
71 Longueville Road  
Lane Cove, NSW 2066  
Australia

## State of Nationality

AU

## State of Residence

AU

## Telephone No.

## Facsimile No.

## Teleprinter No.

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

*C. Carrié*  
Christine Carrié

Telephone No.: (41-22) 338.83.38

# PCP

## REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty

receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum)

84680

Box No I TITLE OF INVENTION

VIRTUAL EPROM SIMULATOR APPARATUS

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Aristocrat Leisure Industries Pty Ltd  
71 Longueville Road  
Lane Cove 2066  
New South Wales  
Australia

☐ This person is also inventor.

Telephone No

Facsimile No.

Teleprinter No.

State (that is, country) of nationality:

AU

State (that is, country) of residence:

AU

This person is applicant for the purposes of:

☐

all designated States

☒

all designated States except the United States of America

☐

the United States of America only

☐

the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Curtis, Keith Edwin  
138 Park Ridge Lane  
Henderson  
Nevada 89015  
USA

This person is:

☐

applicant only

☒

applicant and inventor

☐

inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

US

State (that is, country) of residence:

US

This person is applicant for the purposes of:

☐

all designated States

☐

all designated States except the United States of America

☒

the United States of America only

☐

the States indicated in the Supplemental Box

☒

Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒

agent

☐

common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

F B RICE & CO  
605 Darling Street  
BALMAIN NSW 2041  
AUSTRALIA

Telephone No

(612) 9810 7133

Facsimile No.

(612) 9810 8200

Teleprinter No.

☐

Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

## Continuation of Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTORS

*If none of the following sub-boxes is used, this sheet is not to be included in the request*

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Bond, Eugene Thomas  
6329 Lena King Avenue  
Las Vegas 89120  
Nevada  
USA

This person is:

- ☐ applicant only
- ☒ applicant and inventor
- ☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

US

State (that is, country) of residence:

US

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
- ☐ applicant and inventor
- ☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
- ☐ applicant and inventor
- ☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
- ☐ applicant and inventor
- ☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.



**Box No. V DESIGNATION STATES**

The following designations are hereby made under Rule 4.9(a) (*mark the applicable check-boxes; at least one must be marked:*

**Regional Patent**

- ☐ **AP ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☐ **EA Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☐ **OA OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (*if other kind of protection or treatment desired, specify on dotted line*) .....

**National Patent** (*if other kind of protection or treatment desired, specify on dotted line*):

- |  |  |
|--|--|
| <input type="checkbox"/> <b>AE</b> United Arab Emirates .....                  | <input type="checkbox"/> <b>LS</b> Lesotho .....                                   |
| <input type="checkbox"/> <b>AL</b> Albania .....                               | <input type="checkbox"/> <b>LT</b> Lithuania .....                                 |
| <input type="checkbox"/> <b>AM</b> Armenia .....                               | <input type="checkbox"/> <b>LU</b> Luxembourg .....                                |
| <input type="checkbox"/> <b>AT</b> Austria .....                               | <input type="checkbox"/> <b>LV</b> Latvia .....                                    |
| <input checked="" type="checkbox"/> <b>AU</b> Australia .....                  | <input type="checkbox"/> <b>MD</b> Republic of Moldova .....                       |
| <input type="checkbox"/> <b>AZ</b> Azerbaijan .....                            | <input type="checkbox"/> <b>MG</b> Madagascar .....                                |
| <input type="checkbox"/> <b>BA</b> Bosnia and Herzegovina .....                | <input type="checkbox"/> <b>MK</b> The former Yugoslav Republic of Macedonia ..... |
| <input type="checkbox"/> <b>BB</b> Barbados .....                              | <input type="checkbox"/> <b>MN</b> Mongolia .....                                  |
| <input type="checkbox"/> <b>BG</b> Bulgaria .....                              | <input type="checkbox"/> <b>MW</b> Malawi .....                                    |
| <input type="checkbox"/> <b>BR</b> Brazil .....                                | <input type="checkbox"/> <b>MX</b> Mexico .....                                    |
| <input type="checkbox"/> <b>BY</b> Belarus .....                               | <input type="checkbox"/> <b>NO</b> Norway .....                                    |
| <input type="checkbox"/> <b>CA</b> Canada .....                                | <input checked="" type="checkbox"/> <b>NZ</b> New Zealand .....                    |
| <input type="checkbox"/> <b>CH and LI</b> Switzerland and Liechtenstein .....  | <input type="checkbox"/> <b>PL</b> Poland .....                                    |
| <input type="checkbox"/> <b>CN</b> China .....                                 | <input type="checkbox"/> <b>PT</b> Portugal .....                                  |
| <input type="checkbox"/> <b>CU</b> Cuba .....                                  | <input type="checkbox"/> <b>RO</b> Romania .....                                   |
| <input type="checkbox"/> <b>CZ</b> Czech Republic .....                        | <input type="checkbox"/> <b>RU</b> Russian Federation .....                        |
| <input type="checkbox"/> <b>DE</b> Germany .....                               | <input type="checkbox"/> <b>SD</b> Sudan .....                                     |
| <input type="checkbox"/> <b>DK</b> Denmark .....                               | <input type="checkbox"/> <b>SE</b> Sweden .....                                    |
| <input type="checkbox"/> <b>EE</b> Estonia .....                               | <input type="checkbox"/> <b>SG</b> Singapore .....                                 |
| <input type="checkbox"/> <b>ES</b> Spain .....                                 | <input type="checkbox"/> <b>SI</b> Slovenia .....                                  |
| <input type="checkbox"/> <b>FI</b> Finland .....                               | <input type="checkbox"/> <b>SK</b> Slovakia .....                                  |
| <input type="checkbox"/> <b>GB</b> United Kingdom .....                        | <input type="checkbox"/> <b>SL</b> Sierra Leone .....                              |
| <input type="checkbox"/> <b>GD</b> Grenada .....                               | <input type="checkbox"/> <b>TJ</b> Tajikistan .....                                |
| <input type="checkbox"/> <b>GE</b> Georgia .....                               | <input type="checkbox"/> <b>TM</b> Turkmenistan .....                              |
| <input type="checkbox"/> <b>GH</b> Ghana .....                                 | <input type="checkbox"/> <b>TR</b> Turkey .....                                    |
| <input type="checkbox"/> <b>GM</b> Gambia .....                                | <input type="checkbox"/> <b>TT</b> Trinidad and Tobago .....                       |
| <input type="checkbox"/> <b>HR</b> Croatia .....                               | <input type="checkbox"/> <b>UA</b> Ukraine .....                                   |
| <input type="checkbox"/> <b>HU</b> Hungary .....                               | <input type="checkbox"/> <b>UG</b> Uganda .....                                    |
| <input type="checkbox"/> <b>ID</b> Indonesia .....                             | <input checked="" type="checkbox"/> <b>US</b> United States of America .....       |
| <input type="checkbox"/> <b>IL</b> Israel .....                                | <input type="checkbox"/> <b>UZ</b> Uzbekistan .....                                |
| <input type="checkbox"/> <b>IN</b> India .....                                 | <input type="checkbox"/> <b>VN</b> Viet Nam .....                                  |
| <input type="checkbox"/> <b>IS</b> Iceland .....                               | <input type="checkbox"/> <b>YU</b> Yugoslavia .....                                |
| <input checked="" type="checkbox"/> <b>JP</b> Japan .....                      | <input checked="" type="checkbox"/> <b>ZA</b> South Africa .....                   |
| <input type="checkbox"/> <b>KE</b> Kenya .....                                 | <input type="checkbox"/> <b>ZW</b> Zimbabwe .....                                  |
| <input type="checkbox"/> <b>KG</b> Kyrgyzstan .....                            |  |
| <input type="checkbox"/> <b>KP</b> Democratic People's Republic of Korea ..... |  |
| <input type="checkbox"/> <b>KR</b> Republic of Korea .....                     |  |
| <input type="checkbox"/> <b>KZ</b> Kazakhstan .....                            |  |
| <input type="checkbox"/> <b>LC</b> Saint Lucia .....                           |  |
| <input type="checkbox"/> <b>LK</b> Sri Lanka .....                             |  |
| <input type="checkbox"/> <b>LR</b> Liberia .....                               |  |

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

- ☐ .....  
☐ .....

**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (*Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.*)

**Box No VI PRIORITY CLAIM**☐ Further priority claims are indicated in the Supplemental Box

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application:* regional Office	international application: receiving Office
item (1) 24 June 1998 (24.6.98)	60/090514	US		
item (2)				
item (3)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

\*Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box

**Box No VII INTERNATIONAL SEARCHING AUTHORITY**

**Choice of International Searching Authority (ISA)**  
(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):  
**ISA /**

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**Box No VIII CHECK LIST; LANGUAGE OF FILING**

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request : 4  
description (excluding  
sequence listing part): 11  
claims : 2  
abstract : 1  
drawings: 5  
sequence listing part  
of description :

**Total number of sheets:** 23

This international application is accompanied by the item(s) marked below:

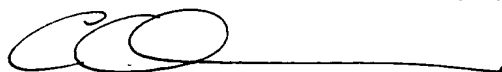
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2. ☒ separate signed power of attorney
3. ☐ copy of general power of attorney: reference number, if any:
4. ☒ statement explaining lack of signature
5. ☒ priority document(s) identified in Box No. VI as item(s): 60/090514
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☐ other (specify):

**Figure of the drawings which should accompany the abstract:** 1

**Language of filing of the international application:** English

**Box No IX SIGNATURE OF APPLICANT OR AGENT**

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CHRIS OWENS  
for and on behalf of F B Rice & Co

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4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more indicate competent): ISA/	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid

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24 June 1999

Our Ref: 84680  
Contact: Chris Owens

**PATENTS**

Dear Sir

**Statement Explaining Lack of Signature**  
**Aristocrat Leisure Industries Pty Ltd, Keith Edwin Curtis, Eugene Thomas Bond**  
International Patent Application  
Entitled: "Virtual EPROM simulator apparatus"

With respect to the above new application, we advise that we cannot file a Power of Attorney on behalf of the applicant/inventors Keith Edwin Curtis and Eugene Thomas Bond.

Messrs Curtis and Bond were the applicants and inventors named in the priority application which was filed in USA on 24 June 1998 as US Provisional Application Serial No. 60/90514.

Although our US associates have attempted to make contact, Messrs Curtis and Bond have been unavailable for signature since Aristocrat Leisure Industries Pty Ltd acquired the rights in the invention.

Yours respectfully  
F B RICE & CO

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The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority must be indicated by the applicant in the line below:

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# PCT

## CHAPTER II

### DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

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Identification of IPEA		Date of receipt of DEMAND
<b>Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION</b>		Applicant's or agent's file reference <b>84680</b>
International application No. <b>PCT/AU99/00511</b>	International filing date (day/month/year) <b>24 June 1999 (24.6.99)</b>	(Earliest) Priority date (day/month/year) <b>24 June 1998 (24.6.98)</b>
Title of invention <b>Virtual EPROM simulator apparatus</b>		
<b>Box No. II APPLICANT(S)</b>		
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)  <b>ARISTOCRAT LEISURE INDUSTRIES PTY LTD 71 Longueville Road Lane Cove 2066 New South Wales</b>		Telephone No.  Facsimile No.  Teleprinter No.
State (that is, country) of nationality: <b>AU</b>	State (that is, country) of residence: <b>AU</b>	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)  <b>CURTIS, Keith Edwin 138 Park Ridge Lane Henderson NV 89015 USA</b>		
State (that is, country) of nationality: <b>US</b>	State (that is, country) of residence: <b>US</b>	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)  <b>BOND, Eugene Thomas 6329 Lena King Avenue Las Vegas NV 89120 USA</b>		
State (that is, country) of nationality: <b>US</b>	State (that is, country) of residence: <b>US</b>	
<input type="checkbox"/> Further applicants are indicated on a continuation sheet.		

**Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**

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☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.

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☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

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1. The applicant wishes the international preliminary examination to start on the basis of:

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☐ as amended under Article 34

the claims ☐ as originally filed  
☐ as amended under Article 19 (together with any accompanying statement)  
☐ as amended under Article 34

the drawings ☐ as originally filed  
☐ as amended under Article 34

2. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.

3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

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**Language for the purposes of international preliminary examination: . ENGLISH**

- ☒ which is the language in which the international application was filed.  
☐ which is the language of a translation furnished for the purposes of international search.  
☐ which is the language of publication of the international application.  
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| 3. copy of (or, where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy of (or, where required, translation) of statement under Article 19  | : | sheets |
| 5. letter   | : | sheets |
| 6. other ( <i>specify</i> )   | : | sheets |

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| 1. <input checked="" type="checkbox"/> fee calculation sheet                            | 4. <input type="checkbox"/> statement explaining lack of signature                                  |
| 2. <input type="checkbox"/> separate signed power of attorney                           | 5. <input type="checkbox"/> nucleotide and or amino acid sequence listing in computer readable form |
| 3. <input type="checkbox"/> copy of general power of attorney; reference number, if any | 6. <input type="checkbox"/> other ( <i>specify</i> )  |

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for and on behalf of F B Rice & Co

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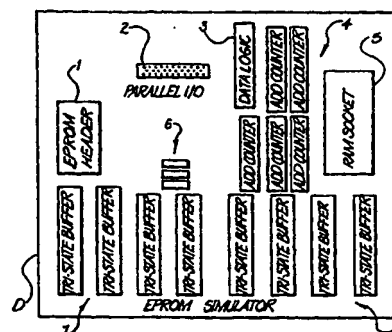
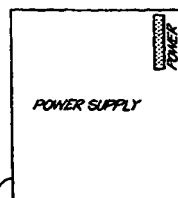
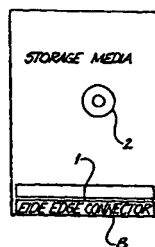
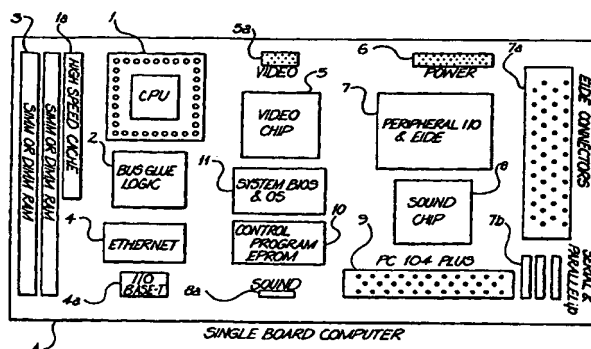
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>G06F 17/00</b>		(11) International Publication Number: <b>WO 99/67721</b>
<b>A1</b>		(43) International Publication Date: 29 December 1999 (29.12.99)
(21) International Application Number: PCT/AU99/00511 (22) International Filing Date: 24 June 1999 (24.06.99) (30) Priority Data: 60/090,514 24 June 1998 (24.06.98) US (71) Applicant (for all designated States except US): ARISTOCRAT LEISURE INDUSTRIES PTY. LTD. [AU/AU]; 71 Longueville Road, Lane Cove, NSW 2066 (AU). (72) Inventors; and (75) Inventors/Applicants (for US only): CURTIS, Keith, Edwin [US/US]; 138 Park Ridge Lane, Henderson, NV 89015 (US). BOND, Eugene, Thomas [US/US]; 6329 Lena King Avenue, Las Vegas, NV 89120 (US). (74) Agent: F.B. RICE & CO.; 605 Darling Street, Balmain, NSW 2041 (AU).		(81) Designated States: AU, JP, NZ, US, ZA, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  Published With international search report.

(54) Title: VIRTUAL EPROM SIMULATOR APPARATUS

## (57) Abstract

An apparatus for simulating the internal configuration of industry standard ROM and EPROM-type chips using other types of storage technologies, while still operating transparently with interfaces and mechanisms such as authentication devices adapted to EPROM-type media. The invention includes: an EPROM connector interface, a data presentation program; user access log display program; a user login/registration program; a software/data library; software/data selection program; and software/data loader program. These components work in conjunction to securely retrieve software images resident in mass storage media and to present them to an authentication device as if the images were resident in EPROM type media. The invention is particularly adapted to use in the gaming industry where regulation and fraud detection are performed using EPROM authentication techniques.



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## ***VIRTUAL EPROM SIMULATOR APPARATUS***

### **Introduction**

This invention relates to the technology of non-volatile memory components commonly known as read-only memory ("ROM"), programmable ROM ("PROM"), and erasable PROM ("EPROM") integrated circuit ("IC") chips. Hereafter, the term "EPROM" will be used to refer to this category of ICs collectively. The present invention is concerned in particular with how to utilize other storage media with various interfaces adapted to the current configuration of standard, commercially available EPROMs.

EPROMs provide circuit designers and computer-based product manufacturers a compact, convenient means of storing programs and data on a single board and, often, single chip. Using EPROMs, products executing relatively static and compact stored programs may be engineered without resort to bulkier storage technologies such as fixed drives, CD-ROMs or diskettes. On the other hand, devices specifically designed for EPROM retrieval are not readily adaptable to retrieve code and data from other storage technologies, when additional capacity and/or newer storage technologies may become desirable.

While highly reliable with minimal mean time between failures, a known disadvantage of EPROMs is that they incur more intermittent and permanent retrieval errors than other kinds of memories such as RAM ICs. For example, the stored contents of an EPROM may degrade over time resulting in state changes to one or more bits. Apparent or intermittent errors may result from synchronization faults occasioned by the generally slower access times of EPROMs compared with faster random access memory (RAM)-type memories. Accordingly, one important category of EPROM interfaces consists of testing devices which rely on the present internal configuration of EPROM chips in order to analyze and verify the integrity of their stored data. Numerous other devices, boards and types of interfaces depend on EPROMs as these are presently configured. The present invention utilizes other storage media while emulating EPROMs for purposes of such devices.

### **Background of the Invention**

The present invention is particularly adapted to the field of casino gaming devices which house one or more games on internal EPROMs. Such devices include what are commonly known as slot machines, video poker

machines, and more recent implementations that have combined both and may offer a variety of games on a single machine, referred to as a "multi-game." EPROMs employed in gaming applications are naturally subject to the inherent limitations and potential faults of EPROMs in any other computer-based apparatus. However, the gaming industry fosters other reasons for assuring the integrity of EPROM contents: regulatory compliance and, due to the possibility of instant pecuniary gain or loss, detecting and thwarting cheaters who could benefit from purposely altered software or payout tables.

In jurisdictions where gaming is permitted, use of such devices is regulated by law. Consequently, in regulated jurisdictions gaming devices are routinely, regularly and randomly verified by the authorities to ensure the compliance, integrity and authenticity of their EPROMs. The present invention is particularly designed to aid in complying with gaming regulations requiring an EPROM-based method for determining the authenticity of the device. A commonly configured multi-game machine would include a number of games such as: keno, poker, slots, blackjack and others. These games can be played separately or be combined into new games, games within games, pushing the limits of software and hardware. Typical gaming machines of this type also employ a combination of mechanical devices, electronics, microprocessors and complex software to generate the gaming experience. Some of the common hardware components used are as follows: a cabinet, handle, jackpot tower, coin acceptor, bill acceptor, credit meters, back-lit glass, reels, monitor, game door, buttons, payout hopper, lights and speakers. The electronics include many of the following components: microprocessor, read only memory (ROM), RAM, high speed data bus, peripheral logic chips for serial and parallel ports, driver circuitry for lamps, speakers, video and other devices. Typical software components would include: power-up initialization, device drivers, game recovery, state machine, random number generator, payout routine, credit management, graphics engine, sound, game engine, game data, security, accounting and reporting functions. As a result, the increasing complexity of such gaming devices commensurately increases the difficulty of ensuring EPROM integrity as well as regulatory compliance.

Software authentication is usually a process carried out by a third party (other than the manufacturer or the casino operator) representing the

gaming enforcement agency that has jurisdiction over the device. The purpose is to ensure that the software controlling the game has not been tampered with, and software authentication is usually required after a large jackpot has been obtained by a player. Authentication also verifies that the gaming software was previously examined and approved by the gaming agency in whose jurisdiction the jackpot occurred. Moreover, casinos wish to verify that the software running the game is legitimate, particularly if a particular machine is not earning the expected amount of revenue, or in response to player complaints about the behavior of a particular game.

#### ***Disadvantages of Prior Art Solutions***

In prior art devices, authentication is usually accomplished by one of two methods. Both methods require opening of the game, removal of the CPU and removal of EPROMs containing the software. In the first method, the removed EPROMs are compared, using an industry standard EPROM programmer/reader, with a custodial (or master) set of EPROMs which have been kept in a secure location. If the comparison indicates that they are the same, the software is considered to be authentic. The second method involves plugging each EPROM into an electronic authentication device, for example a widely used proprietary device marketed under the trade name Kobitron, which generates an authentication identification (ID) for the image resident in the EPROM. The resulting authentication IDs are compared to previously recorded IDs for those EPROMs. If they are identical, the software is verified as authentic.

These methods are common to the gaming industry, but they only apply to software stored in EPROM-style media. U.S. Patent 5,643,086 (Alcorn *et al.*), assigned to a corporate manufacturer of multi-game devices, discloses an apparatus for authenticating software stored using media other than EPROMs, such as a hard drive. However, in the Alcorn apparatus, the software inspects itself and renders a verdict as to its own authenticity. Self-verification and the potential for compromised security at the point of manufacture render the Alcorn technique a generally unacceptable practice in the gaming industry. In addition, Alcorn's apparatus cannot be used with a Kobitron, upon which regulators and owners have come to rely.

Bond *et al.*, the present inventors, disclosed in a patent application entitled "Software Authentication Control System," US Serial No. 60/089654, filed 17 June 1998, a method for authenticating software stored in non-

EPROM-type media that is consistent with accepted practice. A limitation of this disclosure, however, is that it is also not backwards compatible (at the hardware level) with present EPROM-type authentication devices.

5 Present authentication methods are well-suited to prior art devices which use EPROM type storage; however, new operating systems, multi-game devices, and multimedia functionality require new mass storage technologies. Storing gaming software on these technologies render present, accepted, EPROM media authentication devices and procedures useless. And though Alcorn discloses a method for 'authenticating' software stored in  
10 mass media, it ignores the existing authentication paradigm presently expected in the gaming industry. Thus, there is a need for a means of authenticating software stored in modern media that is compatible with existing gaming regulations and practices. The industry is comfortable with having a set of EPROMS for "system" software and a set for each model  
15 (comprising a unique pay schedule, symbols/graphics, and/or play rules), or a set for each game in a multi-game environment.

In brief, the industry requires a method of authentication which is in harmony with current accepted practices, compatible with current authentication hardware, but which can also avail itself of the advantages of  
20 new and future storage technologies.

### **Definitions**

#### **V-PROM**

25 Virtual programmable read-only memory. In the present invention, V-PROMs are logical containers (like file folders or directories) that contain related stored binary information (software and data). V-PROMs aid in the retrieval and management of related stored binary information by logically grouping discrete data and program entities together as if they were stored in EPROM type media.

#### **V-PROM Registry**

30 A program/data directory which provides crucial information used in the management, retrieval and authentication of related programs and data sets. It is comprised of a relational database directory that was designed to store logical EPROM-like grouping information in V-PROM Registries containing the location and media type of related stored  
35 programs and data sets, each group having a unique V-PROM name. of the software games to be installed for a specific application; e.g.,

operator/casino installation.

### Summary of the Invention

5 The present invention offers a number of advantages over prior art devices, including: backwards compatibility with existing EPROM media authentication devices; the ability to present software and data, such as gaming software, stored in non-ROM media as if it were stored in an EPROM media; added security for protecting the software/data presentation process; functionality to browse a list of all software resident on the machine as if it were in an EPROM library; functionality for selecting resident gaming  
10 software for presentation to an authentication device; functionality for registering presentation users; functionality for reporting presentation users and activities.

The present invention, from an apparatus perspective, is a control system for electronic gaming machines which is controlled with a typical  
15 microprocessor configuration, including a CPU, RAM and non-volatile storage devices such as a hard drive and/or CD-ROM, input/output interfaces, video display, operating system, power supply, and a plurality of programs and associated tables and other reference data in ROM/EPROM-type media. The ROM/EPROM includes a presentation capability for passing the program and the data to an external device, such as an authenticator, in response to  
20 an authorized user request directive. The presentation function includes a user registration program, a V-PROM library which groups related gaming software and data into the logical containers termed "V-PROMs," a V-PROM selection program, a loader program, a data presentation program. A mass storage medium, in communication with the invention control program, containing approved gaming software and related data means associated  
25 through V-PROMs is used for non-volatile storage.

The means for emulating an EPROM includes: a pseudo-EPROM memory utilizing some other storage medium, a connection between the  
30 EPROM simulator to and from the CPU, a means for addressing the pseudo EPROM memory, an input data buffer, an output data buffer, and an interface for connecting the EPROM emulation means to an industry standard EPROM reader.

35 From a process perspective, the V-PROM presentation function of the machine's diagnostic routines, which presents mass media based gaming software to ROM media authentication devices, is activated by a key switch

operation initiated by the user (typically a gaming enforcement agent). Upon entering the V-PROM presentation screen, a log of previous presentation screen users is displayed including: usernames, date, time, type of event, V-PROMs presented/authenticated, and the date and time when then log was created. After display of the log, the user is required to register or exit the diagnostic function. To register, the user must enter a username and password. If the password does not match the previously established password for that account, a user registration error is entered into the log and the screen is automatically exited. New users, if allowed, establish their password during their first login session. Optionally, users can be pre-enrolled. If the password does match, the collected registration information is appended to the presentation users' log. After registration, the V-PROM selection screen is activated. The user may browse the entire library of V-PROMs resident on the storage media of the machine, termed V-PROM Registry Set. This information includes V-PROM names, description of related gaming software and data, version numbers, creation times and dates, statistical and marketing information. From this screen, by pressing a button, the user can "present" the currently selected V-PROM image (gaming software and related data, logically grouped) to the E-PROM emulator which then can be authenticated by a connected prior art device that is capable of reading EPROMs. After presentation, the user is required to log the results of the authenticating device's inspection. After this, the user can select another V-PROM image for presentation. When the user is finished testing V-PROMs, the screen is exited via a button press, the diagnostic function is ended and normal game play may resume. In the event of a V-PROM failing inspection, upon exiting the diagnostic function, the game enters a lock-up state which can only be cleared by a special process.

V-PROMs can also contain other V-PROMs, thus, a given software configuration can be stored as a V-PROM containing a series of 'smaller' V-PROMs which contain all of the software to be installed for a specific installation, such as a specific casino.

The V-PROM Registry Set has the added benefit of abstracting the type of storage media from the authentication process thus allowing for the use of a wider variety of storage media. For more detail see patent application of Curtis *et al.* for a Software Verification and Authentication Control System.

**Objects of the Invention**

It is an object of the present invention to provide a device for use within a microprocessor-based device, which allows for authentication of internal data and software code stored in modern media in manner consistent with that which occurs in current EPROM-based technology.

It is another object of the present invention to provide a device for use within a gaming machine, such as a slot machine or a multi-game machine, which allows for authentication of gaming software stored in modern media in a manner consistent with that of EPROM-based prior art systems.

Still another object of the present invention is to provide a device for use within a gaming machine that allows for gaming software to be authenticated with pre-existing means through emulating the physical characteristics of gaming software stored in EPROM-type media.

Still another object of the present invention is to provide a method for accessing/presenting gaming software stored in non-EPROM media as if it were stored in EPROM-type media.

Still another object of the present invention is to provide a method of displaying a resident library of gaming software stored in non-ROM media as if it were stored in EPROM-type media.

Still another object of the present invention is to provide a method for securing the gaming software presentation process.

Still another object of the present invention is to provide a method for registering presentation users.

Still another object of the present invention is to provide a method for reporting presentation users and activities.

Still another object of the present invention is to provide a method for selecting gaming software for presentation to an authentication device.

**Brief Description of the Drawings**

The present invention is more readily understandable by reference to the following detailed description read *in pari materia* with the accompanying drawings in which:

Figure 1 is a simplified schematic diagram of the device of the present invention and related hardware components;

Figure 2 is a block diagram of the EPROM Simulator component detailing process control flow.

Figure 3 is a timing diagram describing the protocol for downloading

to the EPROM simulator.

Figure 4 is a block diagram describing the V-PROM presentation process.

#### **Detailed Description of the Preferred Embodiment**

5 Figure 1 illustrates the hardware components utilized in the preferred embodiment of this invention. Other hardware configurations are possible because of the modular nature of this design. The present invention is a control system, Figure 1, for a gaming machine. The machine is not shown, but can be either a single game or multi-game machine.

10 The control system, figure 1, is comprised of four major modules. Module (A) is a drawing of a commercially available Single Board Computer (SBC). Module (B) is a drawing of a commercially available storage media. Module (C) represents the existence of a power supply. Module (D) represents the EPROM Simulator Board. All four components interconnect. 15 Module (A) connects to Module (B) through the use of either an EIDE cable or SCSIII cable in the case of a SCSIII based SBC. Module (A) also connects to Modules (D) through a parallel I/O cable. Module (C) supplies power to the other four modules via power cables and connectors.

20 In detail, Module (A), the SBC, is comprised of the following components: (1) an X-86 CPU such as a Pentium™ or Pentium II™ processor with MMX™ [Pentium, Pentium II and MMX are trademarks of Intel Corp.] or equivalent technology; (1a) high speed processor cache for improved performance; (2) glue logic chips for driving high speed data busses and interfacing the processor to other high speed components such as RAM, 25 video processors, network chips, and I/O boards; (3) high speed RAM sockets, typically DIMM or SIMM style. (4) integrated high speed network interface; (4a) network interface connector; (5) integrated high speed video processor, (5a) video monitor connector; (6) power connector; (7) custom peripheral I/O chip for driving serial I/O, parallel I/O; disk subsets such as EIDE or SCSIII; 30 (7a) EIDE or SCSIII storage media connectors; (7b) serial and parallel I/O connectors; (8) integrated sound chip; (8a) sound connector; and (9) stackable PC104 Plus connector. It is important to note that this invention, due to hardware abstraction accomplished through the use of a general purpose OS, is not tied to a specific SBC or manufacturer. This invention treats the SBC 35 as a component which can be swapped or upgraded as new boards become commercially available.



Module (B) represents the use of general purpose mass storage media. The media represented in Module (B) can include: Hard disks, CD-ROMS, solid state storage devices, or other common media used in the PC industry. This media is connected (1) to the SBC (A) through a PC industry standard interface such as EIDE, SCSIII, or PCMCIA. (2) represents a drive spindle in the case where spinning media is used. Although this invention can function without mass storage, it is specifically designed to exploit the advantages of such devices.

Module (C) represents a power supply. For the most part, this supply is designed to provide the voltages and current required for using standard PC hardware.

Module (D) represents the EPROM simulator Board. This board is interfaced to the SBC via a parallel cable (not depicted) connect to (A-7b) and (D-2) parallel I/O connectors. This board is responsible for receiving downloaded V-PROM images, stored in RAM (5), allowing for their interrogation by an EPROM reader or Authentication Device attached to EPROM header (1). This board contains the following components: (3) a gate logic chip; (4) five digital counter chips used for addressing RAM (5); (6) three resistors used for biasing the parallel control lines – strobe, autofeed, and init (see fig. 2); (7) four input buffer chips for RAM (5); (8) output buffer chips for RAM (5)

Figure 2 provides more detail on the control system for the EPROM Simulator module (D). Figure 2 describes the following sub-component interactions: control logic (2), components (D-3, 4) responds to parallel I/O control lines, strobe (1b), autofeed (1c) and init (1d), inputs; the strobe input (1b) is used to trigger the control logic to write the data (1a), supplied via the parallel I/O data lines, through the input RAM buffers (3) into the RAM chip (4); the autofeed input (1c) is used to trigger the control logic to increment the address counter; the init input (1d) is used to control access to the RAM buffers (3) either via PC or EPROM control address counter are not selected and held resent for start of next data load from PC. Following data loading and reassertion of the INIT (1d) line, an EPROM reader, or Authentication Device, can read the data stored in RAM (4) through the output RAM buffers (5) as if it were reading an EPROM.

The software which controls the functioning of the present invention is stored in three different places. EPROM (Fig 1. A-10) contains the

diagnostic program for the gaming machine. Storage device (A-11) contains the BIOS and Operating System software. The media type of device (A-11) varies from SBC to SBC, in some cases the BIOS and Operating System software is stored in two separate devices. Distinct software games, and data are stored on media device (B). In some configurations, game software can be stored on a fileserver attached through the network via connector (4a).

The contents of EPROM (Fig. 1, A-10) contains the following software components illustrated in figure 4: diagnostic routines; V-PROM Presentation program (9); user access log presentation program (2); user login/registration program (3); V-PROM Library and selection program (5); and software data loader program (7). V-PROMS are stored in non-volatile storage (B). The V-PROM Registry is stored in secure non-volatile storage not depicted.

Figure 4 details the flow of control during the V-PROM presentation process and is described in the following paragraph. The machines diagnostic routines are triggered by a user via a key switch. Diagnostic routines are selected according to the number of consecutive key switches initiated by the user. Among these diagnostic routines is the V-PROM Presentation Program (1), Figure 4. Upon entering the V-PROM Presentation screen, a log of previous presentation screen users is displayed (2) including: usernames, date, time, type of event, V-PROMS presented/authenticated, and the date and time when then log was created. After display of the log, the user is required to register or exit the diagnostic function (2). To register, the user must enter a username and password (3). If the password does not match (4) the previously established password for that account, a user registration error is entered into the log (4a) and the screen is automatically exited (4b). New users, if allowed, establish their password during their first login session, not depicted. Optionally, users can be pre-enrolled, not depicted. If the password does match, the collected registration information is appended to the presentation users' log, not depicted. After registration, the V-PROM selection screen is activated (5). The user may browse the entire V-PROM registry (7a) library of V-PROMS resident on the storage media (7b) of the machine. This information includes V-PROM names, description of related gaming software and data, version numbers, creation times and dates, statistical and marketing information. From this screen (5), by pressing a button (6), the user can download the selected image to the EPROM emulator (9). To do this, the V-PROM browsing program (5) invokes

the loader program (6) passing it the name of the selected V-PROM. The loader retrieves the image (7b) referencing the registry (7a), and calls the data presenter (8) which subsequently downloads the image to the EPROM simulator (9). The user (11) connects a prior art device that is capable of  
5 reading/authenticating EPROMS. This device (10) authenticates the downloaded V-PROM image. After presentation (8), the user (11) is required to enter the results of the authenticating device's inspection (12). After this, the user can select another V-PROM image for presentation (5). When the user is finished testing V-PROMS, the screen is exited via a button press (6),  
10 the diagnostic function is ended (6a) and normal game play may resume. In the event of a V-PROM failing inspection, upon exiting the diagnostic function, the game enters a lock-up state which can only be cleared by a special process, not depicted.

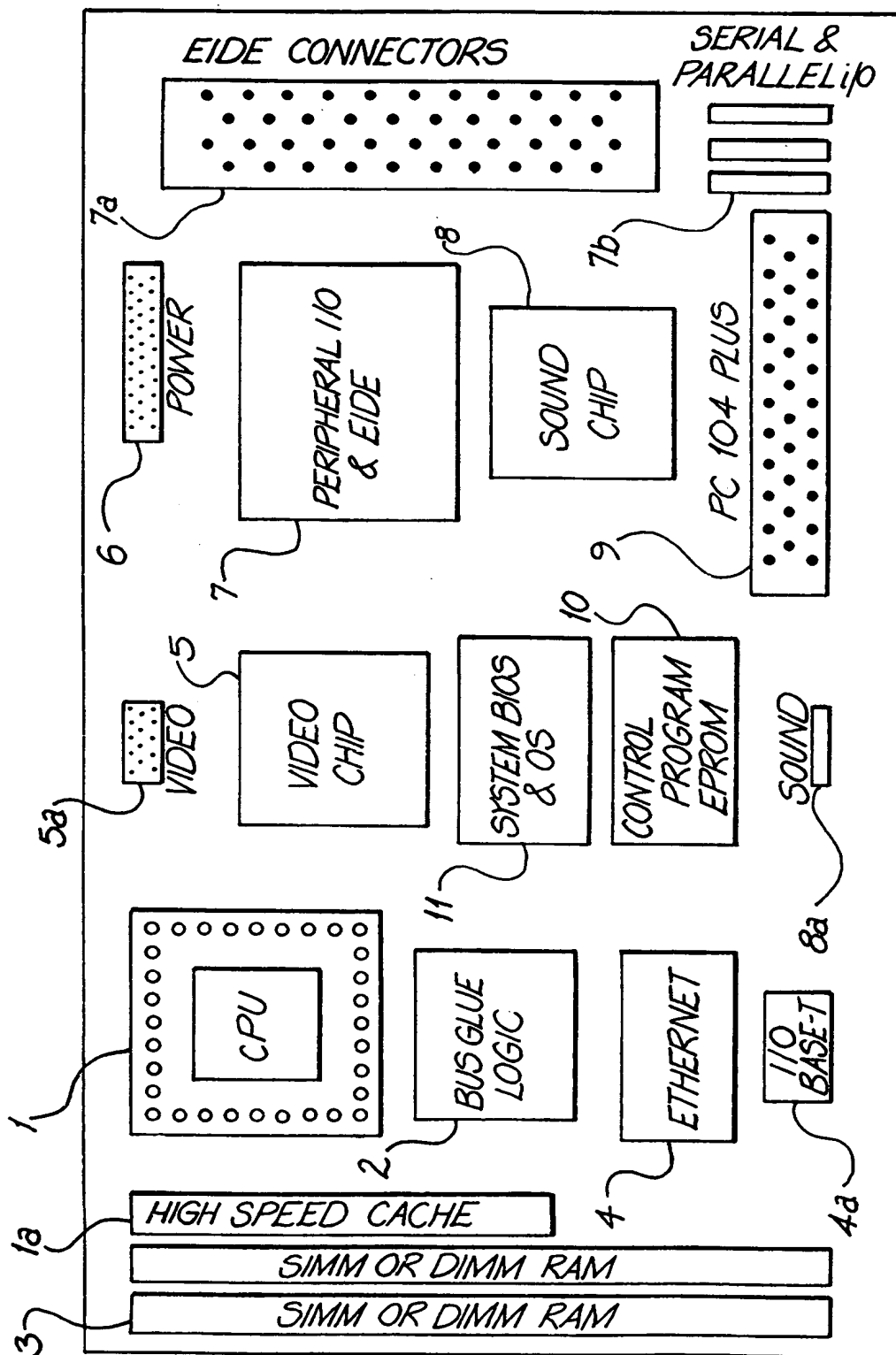
Figure 3 illustrates the protocol that is used to download data to the  
15 EPROM simulator. The data is communicated via a parallel I/O cable. The data is synchronously clocked into the simulator by pulsing the strobe line. The destination address is incremented by the autofeed line. The init line is used to reset the destination address counter to zero.

It will be appreciated by persons skilled in the art that numerous  
20 variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

## CLAIMS:

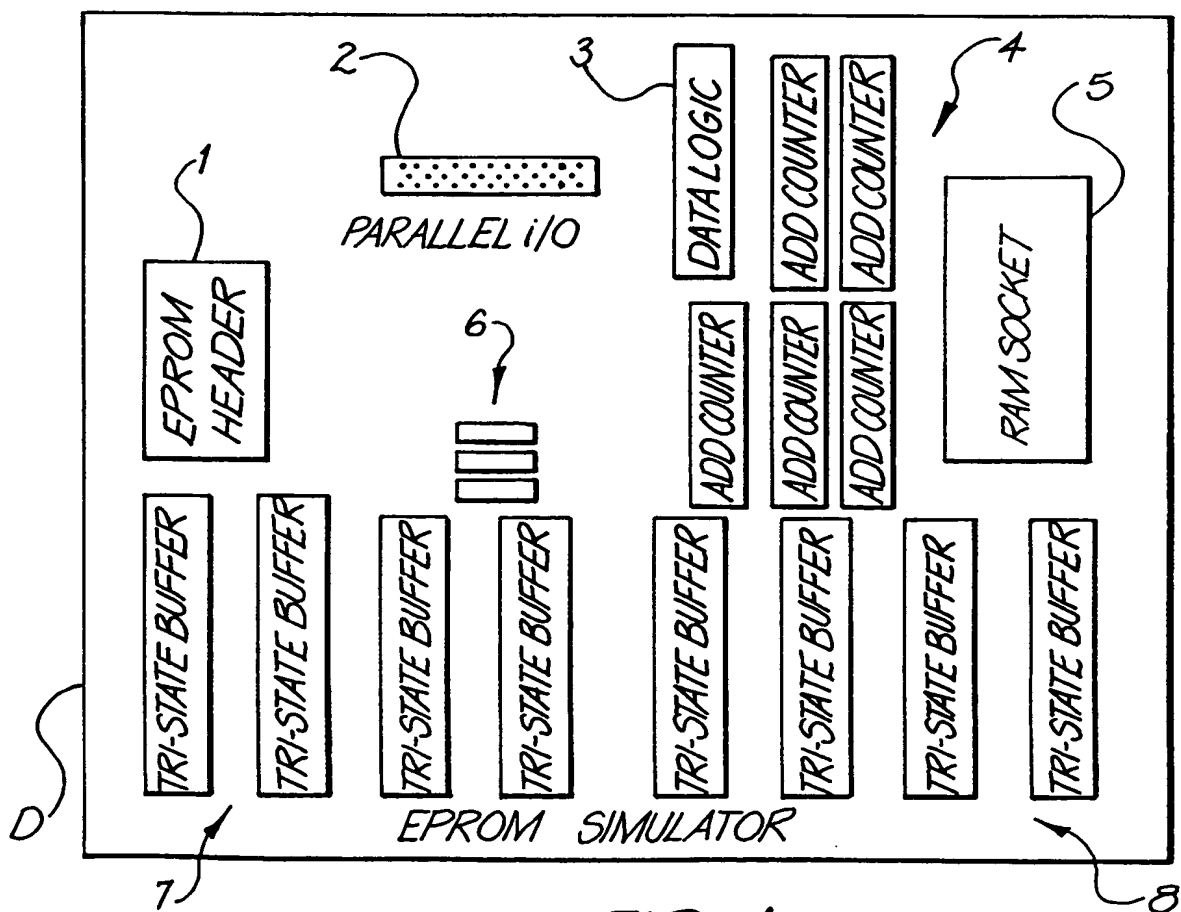
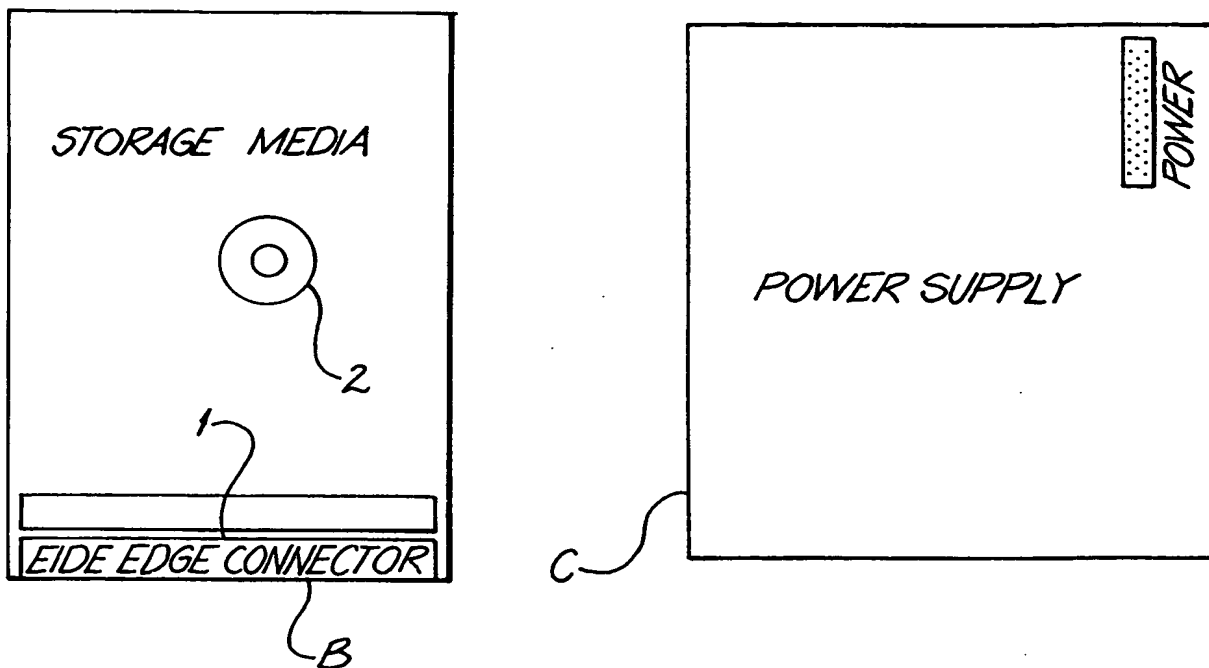
1. A control apparatus for emulating the physical characteristics of binary data stored in EPROM media for use with a digital processing device, comprising a CPU, operating system, dynamic memory, input/output capability and executable software, including:
  - a. a control means;
  - b. a non-volatile storage means;
  - c. at least one V-PROM resident on said non-volatile storage means;
  - d. a communications means between said V-PROM and said CPU;
  - e. a presentation means;
  - f. a means for registering authorized users of said presentation means;
  - g. a reporting means for activities of said users;
  - h. a security means for protection of contents of said V-PROM;
  - i. a selection means for isolating subset of said contents of said V-PROM;
  - j. a connection means between said V-PROM and at least one external EPROM-compatible device.
2. The control apparatus of claim 1, wherein said control means chooses among said subsets of said contents of said V-PROM for presentation to said EPROM-compatible device.
3. The control apparatus of claim 1 or 2, wherein said EPROM-compatible device comprises authentication capability.
4. The control apparatus of claim 3, wherein said authentication capability is designed for gaming activities.
5. The control apparatus as claimed in any one of claims 1 to 4, wherein said subsets of said contents of said V-PROM comprise gaming applications.
6. A method of emulating the physical characteristics of binary data stored in EPROM media for use with a digital processing device, comprising a CPU, operating system, dynamic memory, input/output capability and executable software, said method comprising the steps of:
  - a. controlling said emulation method;
  - b. storing said executable software and related data on a non-volatile storage means;
  - c. providing at least one V-PROM resident on said non-volatile storage means;

- d. providing a communications means between said V-PROM and said CPU;
  - e. providing a presentation means;
  - f. registering authorized users of said presentation means;
  - 5 g. reporting activities of said users;
  - h. protecting contents of said V-PROM;
  - i. isolating subsets of said contents of said V-PROM;
  - j. providing a connection between said V-PROM and at least one external EPROM-compatible device.
- 10 7. The method of claim 6, wherein said software relates to the field of gaming.
8. The method of claim 6 or 7, wherein said EPROM-compatible device relates to authentication activities.



SINGLE BOARD COMPUTER

FIG. 1 CONT.



CONT. FIG. 1

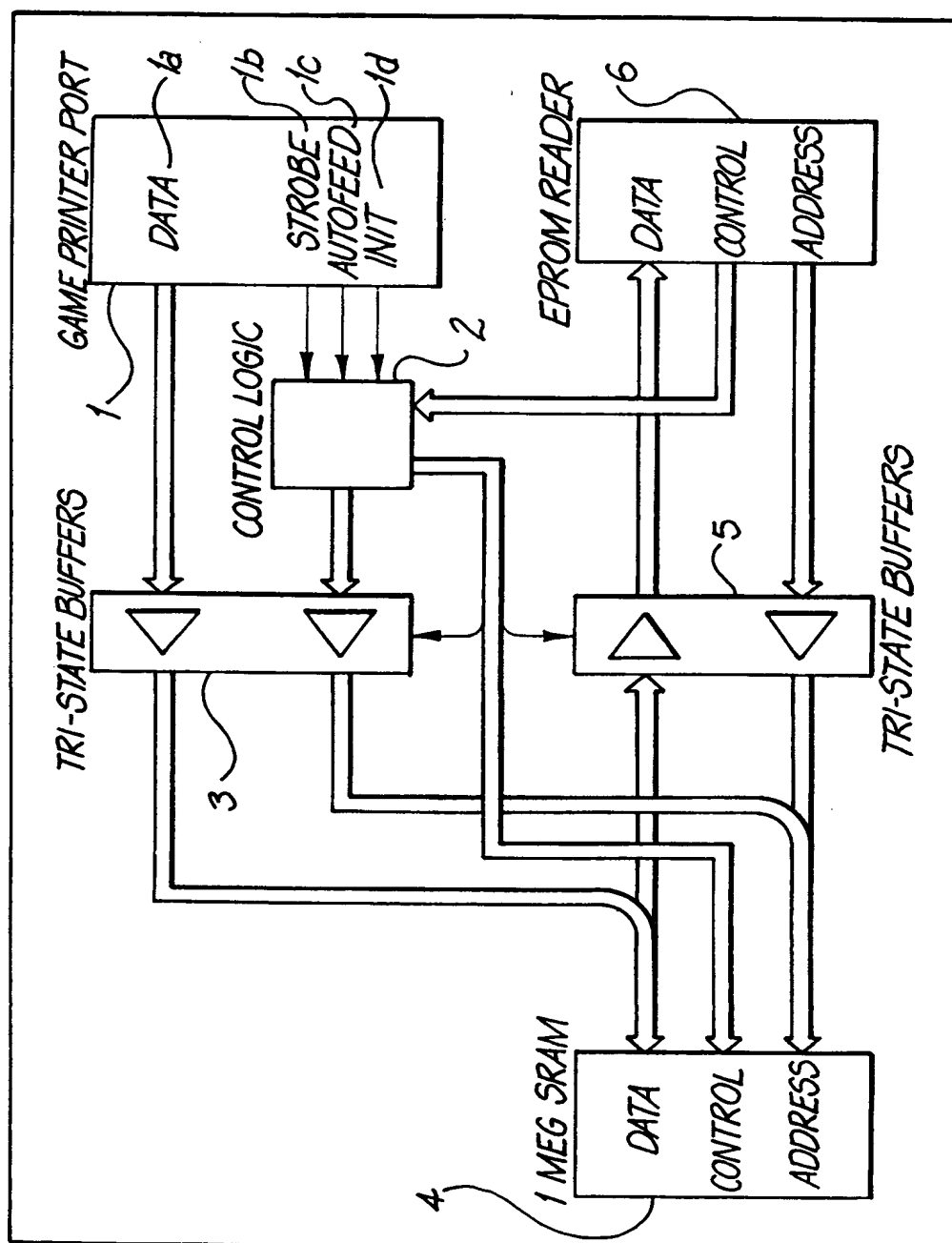


FIG. 2  
EPROM SIMULATOR



Data download protocol,

1. STROBE is pulled high and AUTO FEED is pulled low
2. INIT is then pulled low, (this enables the down load mode and resets the address to 0000)
3. Data for the current address is placed on the DATA lines
4. STROBE is then pulled low then high, (this will write the data into the pod ram)
5. AUTO FEED is then pulled high then low, (this will increment the counter to the next address)
6. Steps 3-5 are then repeated for each byte in the emulator
7. When data transfer is complete INIT must be returned high.

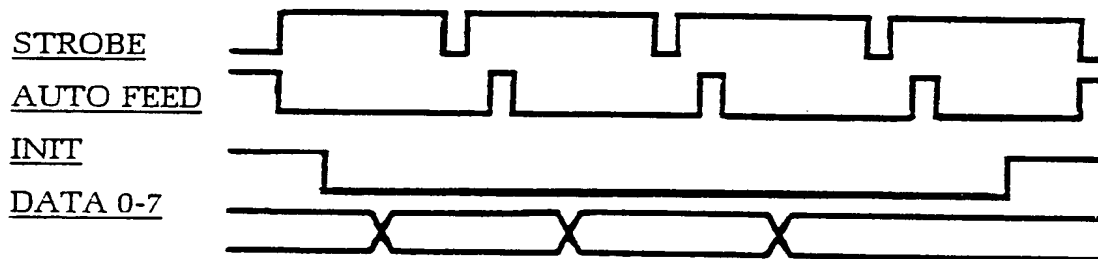


Figure 3 - Download Timing Diagram

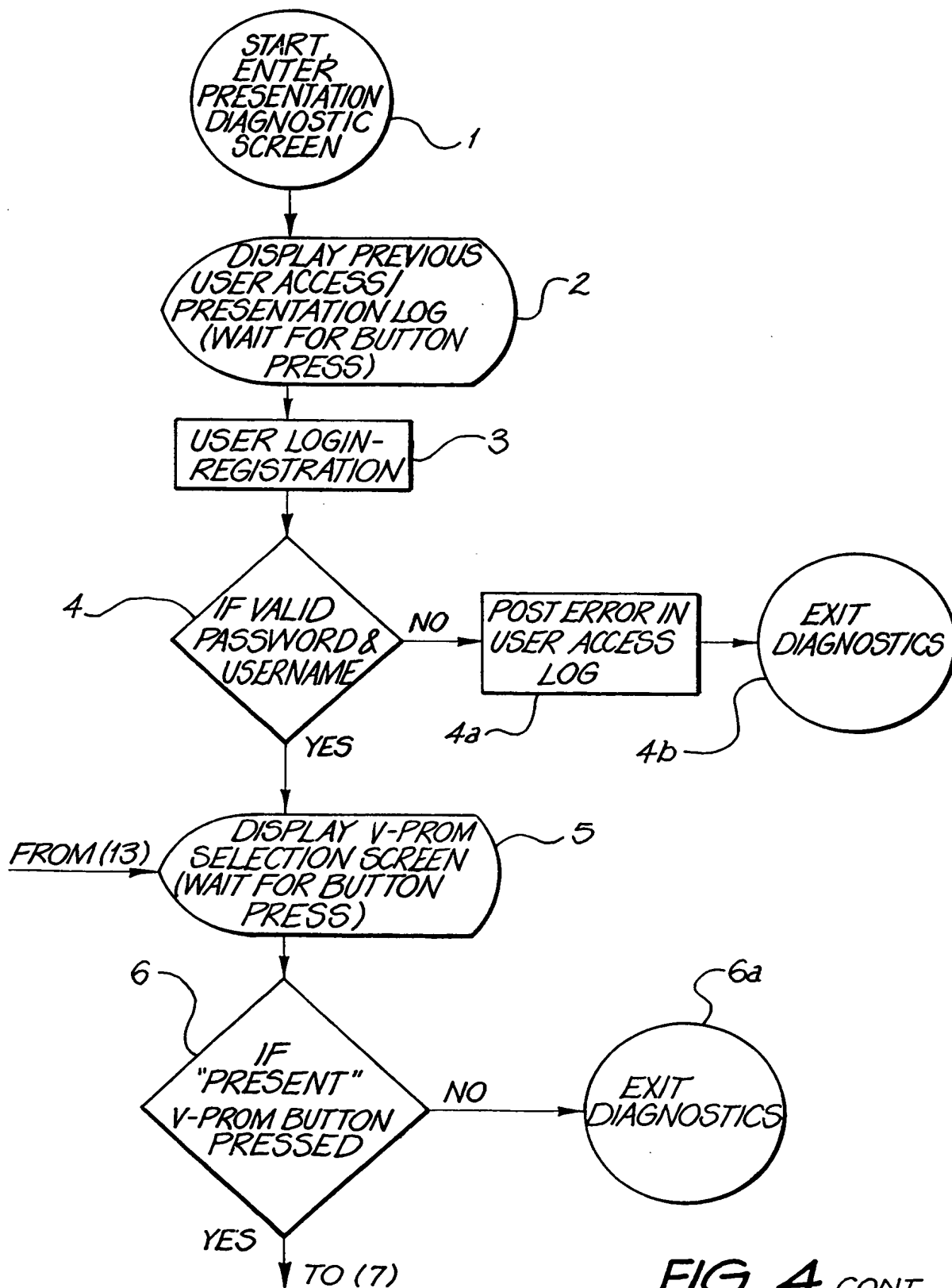
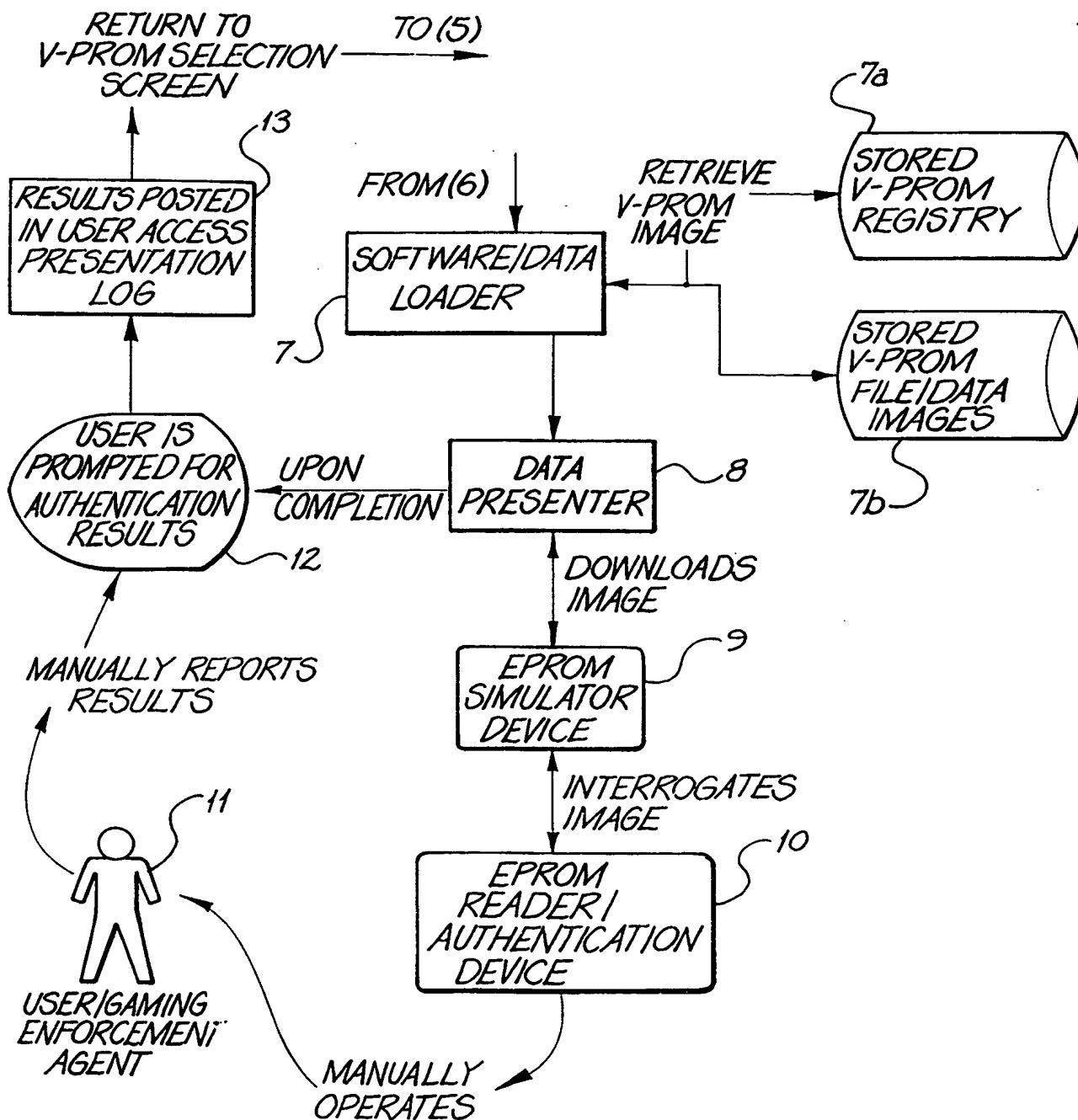


FIG. 4 CONT.



CONT. FIG. 4

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 99/00511

**A. CLASSIFICATION OF SUBJECT MATTER**Int Cl<sup>6</sup>: G06F 017/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**Minimum documentation searched (classification system followed by classification symbols)  
IPC G06F 17/00, 19/00Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
AU: IPC AS ABOVEElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
WPAT: virtual PROM, VPROM, simulat., emulat., EPROM, EEPROM, PROM**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 464 811, A (Matsushita Electric Industrial Co., Ltd. 8 January 1992	1, 6

☐ Further documents are listed in the continuation of Box C☒ See patent family annex

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19 July 1999Date of mailing of the international search report  
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**INTERNATIONAL SEARCH REPORT**  
**Information on patent family members**

International application No.  
**PCT/AU 99/00511**

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